

project WEB

fall
1999

Connecting Projects WILD, WET and Learning Tree in New Hampshire

THE EVIDENCE IS IN: EE SUPPORTS EDUCATION REFORM

For over a decade, environmental educators have argued that teaching about the environment supports contemporary education reform efforts. While these arguments were largely intuitive, a new report provides evidence to substantiate these claims.

A comprehensive study by the State Education and Environment Roundtable (see page 2) documents that students who are taught using the environment as an integrating context through the curriculum, become engaged in their learning, work together, and develop critical thinking skills. These results should come as no surprise to those who actively use Projects Learning Tree, WILD, and WET in their classrooms.

The parallels between the goals of environmental education and education reform are many: developing higher order thinking skills, such as logical analysis and problem solving; fostering in-depth study of

a few of the goals of education reform that form the heart of environmental education.

In support of these lofty goals, environmental education programs are meeting the more immediate needs of educators engaged in reform efforts. To be specific, good programs are demonstrating their alignment with state curriculum standards.

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EDUCATION AND THE ENVIRONMENT: Partners for Change

By: Ruth Flanagan

excerpted with permission from NAAEE's EEducator, Spring 1999

Though sometimes presented as an ancillary, stand-alone subject or filler for Friday afternoon, environmental education was originally conceived to mean something far broader and more profound. It is not a subject, but an approach that integrates many subjects - a kind of teaching that instills what Aldo Leopold termed "a consciousness of land," an understanding of the intricate, dynamic relationship between human beings and the environment, and a search for balance between the two. The National Environmental Education Advisory Council defines environmental education as: "A learning process that increases people's knowledge about the environment and environmental challenges, and develops the



Before we can teach children, we have to give them a reason for learning: the reason being to become part of the world; thinking of it together rather than in pieces.

-Aldo Leopold



a topic rather than superficial coverage of an entire subject area; integrating the disciplines and engaging students in "real world" projects; motivating students to learn actively and challenge their current knowledge of topics. These are but



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ENVIRONMENT-BASED TEACHING IMPROVES STUDENT AND TEACHER PERFORMANCE

BY GERALD A. LIEBERMAN, PH.D. AND LINDA L. HOODY, M.A.

Reprinted with permission from the State Education and Environment Roundtable.

Enabling students to connect and integrate what they are learning with their surroundings significantly improves the performance of both students and teachers. These are the findings of a nationwide study conducted by the State Education and Environment Roundtable, a cooperative endeavor of education agencies from 12 states. *Closing the Achievement Gap*, funded by a three-year grant from THE PEW CHARITABLE TRUSTS, found that K-12 students attending 40 schools that use the environment as an integrating context for learning (EIC), learn more effectively and achieve higher standardized test scores than do students within a traditional educational framework.

Many educators, including specialists in education reform, have long insisted on the value of the problem solving, hands-on approaches espoused by environmental educators. Most of this perceived value was, however, based on personal observations and anecdotal information rather than rigorous research. As a result, educators could not make a strong case for the pedagogical significance of environment-based education to student learning. Therefore, the mainstream education community has never fully embraced environment-based education as an integral part of the formal education system, relegating

study of the environment to a long list of possible supplements to the traditional school curriculum.

In 1995, the Roundtable began discussing the potential of environment-based education for helping students become self-initiating and self-reliant learners who are prepared to participate in an ever-changing society. Ultimately, the Roundtable coined the term EIC, using the Environment as an Integrating Context for learning.

Because EIC programs are located in diverse natural and community settings, each program requires a unique design. However, despite the different designs, the 40 programs examined in this study share these fundamental educational strategies. They:

- 3 break down traditional boundaries between disciplines;
- 3 provide hands-on, minds-on learning experiences, often through problem-solving and project-based activities;
- 3 rely on team-teaching;
- 3 adapt to individual students and their unique skills and abilities; and,
- 3 develop knowledge, understanding, and appreciation for the environment community and natural surroundings.

Students in EIC programs performed better academically than those in traditionally structured courses.

Results

The study revealed that students in EIC programs performed better academically than those in traditionally structured courses. In addition,



ESTHER COWLES PHOTO © 1999

Carol Young-Bolduc of Con-Val High School examines leaves during a PLT Forest Ecology workshop.

the study found that 98 percent of the educators surveyed saw improvements in student enthusiasm and engagement, and 94 percent said that they found EIC to be more adaptable than traditional teaching methods in satisfying students' various learning styles. Seventy percent of those surveyed saw an improvement in student behavior following implementation of the EIC approach.

To further gauge the effectiveness of EIC, 14 of the study schools conducted comparative analyses of academic data for both EIC and traditional students. All 14 found that their quantitative measures of achievement affirmed the positive academic effects of adopting EIC, including one analysis indicating a GPA of 3.2 for the average EIC student compared to a GPA of 2.6 for the average student in a traditional program.

The findings also indicated that the EIC approach has numerous secondary benefits, including an increased sense of pride and ownership among EIC students in their accomplishments and their ability and willingness to make a difference in their community.

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Coupled with the student findings, study results also showed that teachers and administrators at all 40 schools involved in the research described a substantial and identifiable increase in their own levels of enthusiasm and commitment toward education.

"The overwhelmingly positive results uncovered by this research indicate that EIC offers teachers and administrators a stimulating and practical option for applying problem-based, hands-on learning that encourages children to explore the world around them and actively take part in their education," said Pew's education program officer, Ellen Wert.

In Closing


This study indicates that EIC, using the environment as an integrating context for learning, holds great promise for helping to "close the achievement gap" in reading, writing, math, science, and social studies. The environment can provide a meaningful context around which educators can create a curricular framework that intrigues learners and revitalizes teachers.

When teams of educators use

elements of the real world as focal points for learning and teaching, they help students strengthen a variety of academic skills. They can also guide students toward a deeper understanding of the concepts that span traditional disciplinary boundaries and which are extremely difficult to effectively teach using conventional, classroom-bound educational methods.

By helping students apply their classroom knowledge across a wide spectrum of academic and authentic problems, EIC approaches build bridges between theory and reality, schools and communities, children and their futures. EIC helps students make sense of their studies and their world by helping them put the pieces together.

Copies of the Report

Closing the Achievement Gap is available directly from the publisher, Science Wizards, at (619) 676-0273 or visit their web site for information and an order form <http://members.home.net/spawn1/sciwiz/index.html>. The Executive Summary may be viewed at <http://www.seer.org> 

WHAT IS EIC?

Using the ENVIRONMENT AS AN INTEGRATING CONTEXT for learning (EIC) designates pedagogy that employs natural and socio-cultural environments as the context for learning, while taking into account the "best practices" of successful educators. This methodology teaches traditional subjects, including math, language arts, social studies, and science, by integrating them together in the context of the students' local environment and surrounding community.

In EIC, "environment" is defined by the school's locale, resources and student needs; therefore, it varies from school to school. It may be a river, a forest, a city park or an asphalt playground, depending upon the socio-cultural and natural systems in a given community.

Selecting High Quality EE Programs

With so many environmental education programs, how do you know which ones are high quality? Turn to the newly published *Environmental Education Materials: Guidelines for Excellence* published by the NORTH AMERICAN ASSOCIATION FOR ENVIRONMENTAL EDUCATION. This set of recommendations provides educators with a tool to evaluate the wide array of materials available. It also provides guidelines for those seeking to develop their own instructional materials. A workshop on these guidelines is also being offered (see page 6 for details). For more information on the guidelines, contact NAAEE at P.O. Box 400, Troy, Ohio 45373; 937-676-2514; jthoreen@igc.apc.org.

WEB SIGHTINGS...

The Environment: A Global Challenge

A new web site offers information on nearly every environmental subject. There are many fun interactive features, including discussion forums, surveys, a system for using the site in the classroom, trivia contests, and simulations. This site can be reached at <http://library.advanced.org/26026>

A Thousand Friends of Frogs

The Center for Global Environmental Education at Hamline University in Minnesota has developed an educator activity guide on

frogs. The New Hampshire Fish and Game Department has copies available by contacting Judy Silverberg, or you can go directly to A Thousand Friends of Frogs website at <http://cgee.hamline.edu/frogs>

Earth Day 2000 Poster Contest

The Office of Solid Waste of USEPA is conducting an art contest for children in grades K-12 to highlight program initiatives and goals of the solid waste program. For more information go to <http://www.epa.gov/epasower/osw/students.htm>

CHANGE *continued from page 1*

necessary skills, expertise, and motivation to address these challenges with informed decisions and responsible actions.”

Of course, it's one thing to argue that environmental education is food for ensuring that people make informed and responsible decisions that affect the environment. But is it good for education? If education reform initiatives make pedagogical sense, the answer is “yes.” “The most important reason is probably the simplest,” says Dixie Reimer, a science teacher at Komachin Middle School in Olympia, Washington. “Children care deeply about the environment.”

As a result, she says, important and engaging environmental themes can breathe life into academics, providing the relevance that motivates students to learn. Many educators believe that environmental studies hold particular promise for improving students achievement in science and math, a goal specifically mentioned in *Goals 2000*, the national agenda for education reform. Environmental topics also lend themselves to hands-on instruction, so they appeal to students’

diverse learning styles.

Since environmental issues are by nature multifaceted and interdisciplinary, they provide rich opportunities for teaching across the curriculum. “You can’t understand environmental problems unless you have a good sense of numbers, like parts per million and billions of people,” says Gary Heath, Branch Chief for Arts and Sciences for the Maryland Department of Education.

“Nor can you understand them unless you understand the government, economics, and geography. How can you address an environmental problem unless you know about the people involved?” This encompassing quality can encourage a shift to interdisciplinary teaching, he argues, helping teachers to restructure their curricula and link



DEBBIE KING PHOTO © 1999

A Project WET workshop attendee shares his experience of integrating the “Sum of the Parts” activity into his curriculum.

disparate subjects in meaningful ways.

Environmental issues also provide ample opportunities for students to solve problems. This point touches on one of the more controversial, and often misunderstood, facets of environmental education. While some environmental education programs have been criticized as politically biased, high quality programs never advocate a particular viewpoint. Rather, they encourage students to investigate issues from all sides, and then - and only then - make their own informed decisions, and take responsible and constructive actions when appropriate. The process of investigation helps students develop the critical thinking skills that more and more schools are trying to cultivate.

Clearly, this is a dynamic, if tumultuous, time for education and the environment alike. The “right” path to take remains to be seen. But as today’s students move into adulthood, that path may become clearer. After all, it is those students’ knowledge, attitudes, and actions as citizens that will tell us, in the end, whether we have succeeded. **WEB**

WHY IS EE IDEAL FOR IMPROVING STUDENTS LEARNING?

TEACHING ABOUT THE ENVIRONMENT AND ENVIRONMENTAL ISSUES CAN BE USED TO:

- DEVELOP INQUIRY, PROBLEM-SOLVING, AND CRITICAL THINKING SKILLS;
- DEVELOP TEAM BUILDING AND GROUP DECISION-MAKING SKILLS;
- PROMOTE HANDS-ON LEARNING;
- TIE LEARNING TO THE COMMUNITY WITH A REAL-WORLD APPLICATION;
- STRENGTHEN LEARNING IN CORE SUBJECTS (SCIENCE, MATH, GEOGRAPHY, LANGUAGE ARTS, CIVICS, ETC.)
- PROMOTE INTERDISCIPLINARY LEARNING;
- PROMOTE LEARNING ABOUT TECHNOLOGY AND TECHNOLOGICAL ADVANCES.

Opportunity to Join EE Professional Organization

NEW HAMPSHIRE ENVIRONMENTAL EDUCATORS is a statewide professional association of environmental educators, teachers, administrators, students, and others. The mission of NHEE is to advocate for high quality environmental education in New Hampshire and to provide environmental educators with a forum for networking and professional development.

NHEE publishes a newsletter, offers programs and workshops, hosts the NEW ENGLAND ENVIRONMENTAL EDUCATION ALLIANCE CONFERENCE every sixth year, and sponsors other appropriate activities. They have a website and provide a listserv to help members throughout the state communicate with each other quickly and easily. NHEE also is an affiliate member of the NORTH AMERICAN ASSOCIATION OF ENVIRONMENTAL EDUCATION (NAAEE), which provides access to a great

variety of environmental resources. For more information, please view the NHEE website at

www.proctornet.com/nhee/nhee.htm

An individual membership to NHEE is only \$20/year, for which you receive the quarterly newsletter, a copy of the bi-annual *New England Journal of Environmental Education*, participation in the listserv, and opportunities to network and build relationships with other NHEE professionals. To become a member of NHEE, please contact Paul Bocko, membership coordinator, at 525-3394 or fill out the form below.

EVIDENCE *continued from page 1*

Projects Learning Tree, WILD and WET have reports correlating their activities to the state curriculum frameworks in English language arts, mathematics, science, and social studies. There are also reports aligning the programs to national curriculum standards.

There is no better time to embrace environmental education as a central theme for a classroom curriculum. In so doing, educators will not only meet important reform goals, they will engage their students in learning that is both fun and meaningful. ●WEB

NHEE Membership Form

Name: _____

Address: _____

City: _____

State: _____ Zip: _____ Phone: _____

Fax: _____ E-mail: _____

Organizational Affiliation (if any): _____

I have enclosed:

☐

\$15 for student membership

All checks should be made payable to NHEE

☐

\$20 for individual membership

☐

\$30 for organizational membership

Please send forms to: NHEE, c/o Matt Poole, 105 River Rd., Weare, NH 03281

Activities Related to Articles in This Issue

Since the completion of the NH curriculum frameworks, many teachers and school districts have been examining what is being taught and how it is being taught. Thematic interdisciplinary units are one approach some districts are using. Activities from Project WILD, Project WET and Project Learning Tree lend themselves to being used to create units or portions of units. Here is an example of how activities from these projects can be selected to create a unit on exploring our natural heritage.

Project Learning Tree suggests:

A Look at Lifestyles examines the historical attitudes of Native Americans

and American pioneers toward the environment and natural resources. Students reflect on their own lifestyles, and identify trade-offs between simple subsistence and modern technology-based living.

In *Tree Cookies*, students learn about a tree by looking at its annual rings. Tree rings show patterns of change in the tree's life as well as changes in the area where it grows.

From Project WET:

In *Common Water*, student's role-play water usage spanning 200 years and discuss quantity and quality issues that arise.

Nature Rules! helps students learn about the occurrence and effects of natural disasters that have happened in their local area.

Project WILD suggests:

Photos Keep It Happening by creating a photo or other visual study of wild animals, symbolic of their historical and contemporary influence on human cultures.

Students simulate a process of land development in a physically involving activity when they look at *Shrinking Habitat*.

ANNOUNCEMENTS

We're Looking for a Few Good Teachers

Northern Woodlands magazine is looking for high school and middle school teachers in New York and New England who are interested in presenting students with a broad view of the environment and natural resources.

At no cost to you or your school, you'll receive:

- * a copy of the Fall, Winter and Spring issues of *Northern Woodlands* for each student;
- * a teacher's guide with references to related materials in print and on-line;
- * references to state education standards;
- * activity sheets to reinforce lessons.

Last year, the magazine proved to be a powerful teaching tool in high school and middle school classrooms. Some comments from teachers who participated:

"Without [Northern] Woodlands as a resource, I'd be hard-pressed to interest my students in current events related to natural resources."

"A good way to turn young students on to natural history."

"Students were able to see both sides of the issues around use of forest resources and the preservation of forests."

For information or to sign up, call Mary Jeanne Packer at Ghostwriters Communications at 802-287-4284

Children and Schools To Be The Focus Of 1999 National America Recycles Day

It is time to start thinking about how your classroom or school will

celebrate the third annual AMERICA RECYCLES DAY in New Hampshire (ARD-NH) coming this November 15, 1999.

N.H. Schools Can Win Great ARD-NH Prizes!

New plans for New Hampshire schools this year will include a SCHOOL RECYCLING CONTEST. Your classroom or school can be eligible to enter to win exciting prizes including a school-wide recycling related professional performer, classroom ice cream or pizza parties, money to be used for your school environmental club, and more! For contest information and other suggestions on how your classroom, school, or school club can participate in ARD-NH, contact Barbara McMillan, at the NH DEPARTMENT OF ENVIRONMENTAL SERVICES at 271-3712 or visit the ARD-NH web site at www.des.state.nh.us/pcas/ARD/ArdhomeF.htm

Environmental Education Materials – Guidelines for Excellence

January 13, 2000, 2-5 p.m.
Audubon House, Audubon Society of New Hampshire, Concord, NH

Pre-register by January 6, 2000 with Scott Fitzpatrick

Participants will use the six key

characteristics and associated indicators outlined in this excellent resource to analyze a variety of environmental education materials. All participants will receive a copy of the guideline manual and additional evaluation tools.

Calling All Vernal Pool and Amphibian Enthusiasts

Are you already involving your students in vernal pool studies? Are you looking for a way to excite your students and involve them in real research that in turn covers a number of New Hampshire Science Frameworks?

New Hampshire Fish and Game is trying to coordinate and receive data on the location and health of vernal pools in the state and needs your help. This project already has been successful in a variety of different level science classes from middle through upper level high school. Live frogs can be the key to get your students hooked on science.

If you would like more information on vernal pool studies or are already conducting some level of vernal pool studies with you students, please call Marian Baker, 478-5650 or send an e-mail message to mbaker@monad.net



Our web address
has changed!

www.des.state.nh.us/wet

ON THE H.O.M.E. FRONT

Education Reform From the Ground Up

You can be an agent of education reform on your school grounds, with a project to study, use, and enhance the site for wildlife habitat.

Renewed interest in schoolyard habitats marks a new way of thinking about education. Schools use their surroundings and community as a comprehensive framework within which students can construct their own learning. Teachers and administrators provide guidance, using proven educational practices. The team-oriented projects invite participation from a broad spectrum of the school community. These model efforts are a part of a larger movement to reorient education back toward the community.

Schoolyard habitat projects capitalize on children's innate attraction to animals and the natural world, while providing unique opportunities to combine traditional subject areas into a meaningful whole. For example, mapping the schoolyard involves skills in math, language arts, geography, art, and science. Teams of students research sources of published maps. They use the technology of GIS (Geographic Information Service) maps, or garden design programs to draw and design their own. They collect data from the site and apply it to the maps.

This process yields discoveries about the schoolyard that inspire further studies.

How can you participate in this revival? In a review of the SEER report from *Orion Afield* magazine*, educators from some of the most successful EIC programs suggest the following steps. We agree; these steps are the backbone of Project HOME.

- Build a team with like-minded teachers.

This is a core tenet of PROJECT HOME. Schools begin by assembling a team of teachers, school staff, and parents.

- Designate one or two individuals to be the teams' hub for communications.

AT FRANCESTOWN ELEMENTARY SCHOOL, the lead teacher keeps contact with the HOME Coordinator and serves as the liaison between volunteers and projects with an entertaining newsletter.

- Begin planning well in advance of implementation.

THE HAROLD MARTIN SCHOOL hosted their training workshop in January; a year later, they held a spring planting day and garden party. The time between allowed them to study, plan, and solicit donations of materials and services from a variety of community sources.

- Invest ample time in formulating plans for curricular integration.

THE GREAT BROOK SCHOOL focused on an integrated study of wetlands, including: scientific illustration of plants; studying the area's historic mills, and making a picture quilt; video production; planting a wildlife area; designing and building a boardwalk; and a River Fest to teach and celebrate

what they had learned.

- Start small – perhaps one teaching team and one or two month-long units.

GREENLAND CENTRAL SCHOOL acquired land that includes an orchard and woods, and a grant to fund its management. The primary grade teachers are using this area “as is” to study birds. They plan to enlist the help of older grades to enhance the area for habitat and add more study areas.

- Build gradually, adding new team members and increasing the number of study units.

THE McDONOUGH SCHOOL PTA initiated a beautification project that evolved into a wildlife garden. Classes were gradually incorporated into the process. The project was turned over to a group of teachers, who are now planning ways to both use the existing garden, and expand the enhancement efforts.



A 4th grade teacher wheels a fruit tree into place on the Francetown school grounds. T-shirt and plant sales help fund the habitat project.



Francetown students and parent volunteer dig in to make room for a new shrub. A newsletter keeps everyone up to date on successes and upcoming work projects.

■ Seek administrative guidance and support from the inception.

THE HAROLD MARTIN SCHOOL principal was fully behind her school's project. She arranged for substitutes to allow her teachers in-school time to plan, and she balanced the needs of the teachers with those of the parents involved.

■ Establish a network of support involving both community and technical resources.

THE NOTTINGHAM SCHOOL's advisory team includes local landscapers, a COOPERATIVE EXTENSION forester, COVERTS volunteers, and parents. BATH SCHOOL has been working closely with their

CONSERVATION COMMISSION, which brings professional expertise and funding to the project.

■ Review your progress through self-evaluation and ask others for suggestions about how to improve the program.

The general assumption is that once the project is in the ground, it is done. Not so.

Evaluation is essential for optimum maintenance and health of the project. It also feeds into new study.

■ Be patient – it may take three or four years for teams to solidify and programs to gain stability.

Schoolyard habitat projects can become the focal point for the entire school's curriculum, an effort that takes time. NORTH HAMPTON SCHOOL's nature trail has evolved over decades. Originally built about 40 years ago, it was rehabilitated in 1992 by a group of HOME teachers. Over the next few years, students and scout groups rejuvenated an historical

cemetery, created trail markers, and installed a trail map, and a teacher adopted the trail to teach team skills and outdoor survival techniques.

Project HOME school teachers and parents often comment on how students are engaging with the real world in ways they weren't engaging with textbooks. They see the learning lasting. They see students, who don't excel in a traditional academic environment, having success with these projects. That may be the best argument in favor of education reform from the ground up.

*Reference: Orion Afield Spring 1999, vol. 3, # 2, "Educational Environments." Published quarterly by The Orion Society, 195 Main St., Great Barrington, MA 01230; 413/528-4422; orion@orionsociety.org; www.orionsociety.org

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